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## A FLEXIBLE SYSTEM FOR LOCALISED SUSTAINABLE DEVELOPMENT

### ELASTYCZNY SYSTEM LOKALNEGO ROZWOJU ZRÓWNOWAŻONEGO

#### Abstract

Responding to population growth requires efficient planning procedures in order to address the challenges of housing demand and consumption of natural resources. Following the decentralised government approach of Germany and learning from past experiences, the city of Frankfurt am Main has adopted a strategic decentralised planning approach that allows the municipality to manage urban development in accordance with the current needs of the city in a specific moment in time. This approach is based on a land use regulation set up by the regional authority, combined with demand-driven localised sustainable development planning on the municipal level. This paper describes the main issues for sustainable urban development in Frankfurt am Main as well as the main characteristics of the spatial planning system, including the planning instruments for localised sustainable planning, non-formalised planning processes and an example of local district planning.

**Keywords:** sustainable development, flexible planning, strategic planning

#### Streszczenie

Reagowanie na wzrost liczby ludności wymaga skutecznych procedur planowania w celu sprostania wyzwaniom związanym z popytem na mieszkanie i zużyciem zasobów naturalnych. W związku ze zdecentralizowanym podejściem rządu do Niemiec i wyciąganiem wniosków z przeszłych doświadczeń, miasto Frankfurt nad Menem przyjęło strategiczne podejście do planowania, które pozwala gminie zarządzać rozwojem urbanistycznym zgodnie z aktualnymi potrzebami miasta w określonym momencie. Podejście to opiera się na regulacji użytkowania gruntów ustanowionej przez władze regionalne, w połączeniu z popytowym lokalnym planowaniem zrównoważonego rozwoju na poziomie gminy. Artykuł opisuje główne problemy zrównoważonego rozwoju miast we Frankfurcie nad Menem, a także główne cechy systemu planowania przestrzennego, w tym instrumenty planowania dla lokalnego zrównoważonego planowania, niesformalizowane procesy planowania i przykład planowania lokalnej dzielnicy.

**Słowa kluczowe:** rozwój zrównoważony, planowanie elastyczne, planowanie strategiczne

## 1. The Challenges of a Growing City<sup>1</sup>

Located in the federal state of Hesse, Frankfurt am Main is the fifth-largest city in Germany and the heart of the FrankfurtRheinMain metropolitan region with around 5.6 million inhabitants [9, p. 5]. Similar to several other major cities in Germany (and contrary to some shrinking regions in the country), the population in Frankfurt is experiencing a growing trend, as employment and educational facilities, transport connections and good quality of life are continuously attracting new residents. In 2014, Frankfurt reached a population of 708,543 inhabitants, and it is projected to attain around 810,000 inhabitants by 2030 [3, p. 62]. This demographic growth is a trend which is mainly influenced by a population influx from Germany, but also incoming international population employed in the financial, information technologies and chemistry sectors [11, pp. 33–35]. The attractiveness of Frankfurt causes constant demographic and social change, along with a demand for affordable housing, services, infrastructure, and amenities in the city.

A growing city requires a responsive approach to address the emerging issues, while steering urban development towards a sustainable vision of development, in order to increase resilience and minimise the impact on the environment. Frankfurt has improved its position as a city with a good quality of life, where the balance between environmental protection and urban growth is considered a major parameter in the decision-making for urban development. The city is focused on three main urban development aims: avoiding suburban sprawl by a compact, yet green city; promoting social diversity and multicultural lifestyles among the population; and preventing spatial disparities and social segregation. In this sense, the general objective of urban development in the city is to provide attractive and affordable housing accompanied by the provision of good services, efficient urban infrastructure and a high-quality urban environment in order to maintain and improve the quality of life in Frankfurt.

Unlike many other cities, the urban planning system in Frankfurt does not rely on an established city-wide spatial master plan. Instead, the *City Planning Department*<sup>2</sup> and the city *Magistrate*<sup>3</sup> decide step by step on the projects and the areas to be developed in the city by prioritising needs and options of urban development. This system allows the city to react flexibly to emergent challenges and issues, adjust the guidelines of development in accordance with changing urbanisation trends and plan proactively towards an established vision of development. In the next sections, the planning system in Frankfurt will be described, focusing on the urban planning instruments which allow Frankfurt's planning system to be decentralised and flexible while pursuing ambitious sustainable development goals.

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<sup>2</sup> In German: Stadtplanungsamt.

<sup>3</sup> In German: Der Magistrat der Stadt Frankfurt am Main.



Fig. 1. City centre, Frankfurt am Main (©FRA-UAS 2015)

## 2. The Planning Approach in Frankfurt: Strategic Decentralisation

Understanding Frankfurt's spatial planning system begins with recognising a main characteristic of the German public management approach: decentralisation. Germany has a history of decentralisation that has deeply influenced the urban planning approaches in German cities, too: from the formation of the country as a federal state to the creation of metropolitan regions for supporting sustainable development efforts and the resolution of regional conflicts, but where each municipality has by constitutional law autonomy over the decisions regarding urban development within its municipal limits. Urban development, therefore, could be seen as a reflection of the political history and structuring of Germany [4, 7]. Therefore, although the federal and state levels provide the guiding principles and legal basis for spatial planning, it is at the municipal level that the land uses for urban development are defined and regulated [7]. This autonomy translates to the municipal administrative dynamics, with the municipality allocating diverse urban development responsibilities among the different municipal departments and agencies.

Frankfurt is a relatively compact city and the heart of the polycentric Frankfurt Rhine Main metropolitan region. Although the city is autonomous in defining its own development goals, the provision of urban infrastructure and public services relies on the collaboration

with the region. The process of spatial planning is dependent on regional dynamics, as well as the local development trends of the city. In this sense, the city must balance municipal interests with the interests of other municipalities in the region.

### 3. Preparatory Land Use Plan: Regulations for Coordinated Regional Development

According to the report of the Economic Commission for Europe [21, p. 11], one of the fundamental concepts of spatial planning is the “Subsidiarity Principle”. It indicates that decision-making should be driven by local needs and taken at the local level whenever possible. Only when the impact of urban development extends beyond the jurisdiction of a single administration, a higher decision-making level might be necessary. Therefore, regarding a coordinated land use planning and to avoid duplication of functions, Frankfurt is involved as an important player of the *Regional Authority FrankfurtRheinMain*<sup>4</sup>, a legally constituted management body that coordinates regional development in the FrankfurtRheinMain region, to cooperate with the region for the formulation of the *Regional Preparatory Land Use Plan*<sup>5</sup>.



Fig. 2. Frankfurt's central train station district, connection to the region (©FRA-UAS 2004)

<sup>4</sup> In German: Regionalverband FrankfurtRheinMain.

<sup>5</sup> In German: Regionaler Flächennutzungsplan.



The existing challenges, such as affordable housing, transport management, public infrastructure provision as well as protection of the environment and ecology, highlight the importance of cooperating with the surrounding cities and municipalities for meeting the needs of a growing region. As the by-far largest city in the region, Frankfurt offers opportunities for employment as well as social and cultural facilities for both locals and commuters. However, Frankfurt also demands natural resources, e.g. energy and water, only available from the surrounding region. Therefore, the existence of the Regional Authority, as the regional body for expressing and responding to inter-municipal challenges and conflicts, is essential for the quality of life for urban dwellers in Frankfurt and its surroundings.



Fig. 3. Section of the Regional Preparatory Land Use Plan – Urbanisation along the river Main, including the eastern part of the city of Frankfurt, and the municipalities of Offenbach, Mühlheim and Maintal (source: Regionalverband Frankfurt Rhein Main 2016)

In response to the cooperation needs, and as a measure to balance the interests of the cities and municipalities in the region, the state of Hesse established by law the FrankfurtRheinMain Region, today composed by 75 cities and municipalities located in the south of the state. This formally established region (which is smaller than the even more extended metropolitan region) accommodates 2.3 million inhabitants (in 2016) and it is managed by the Regional Authority Frankfurt Rhein Main [6].

The Regional Authority through its legal base has the ability to decide on all land uses allocation in its territory through the *Regional Preparatory Land Use Plan*. This plan provides a framework for city planning and urban, environmental and infrastructure development and aligns local policies and development goals with the needs and vision for the region for each city and municipality associated to the Regional Authority. The plan is meant to empower municipalities to meet the challenges of urbanisation and environmental protection and pave the way for further localised planning procedures [4, p. 2; 17].

For Frankfurt, the need to collaborate with the region has resulted in the definition of a two-stage planning process, guided by the urban development goals and strategies established by the

municipality. The first stage is based on the Regional Preparatory Land Use Plan established by the Regional Authority [8, p. 6]. The second stage is based on localised decision-making and planning, carried out by the Magistrate and the City Planning Department in Frankfurt respectively. The regional planning stage defines the land uses in a regional scale from a strategic perspective, while the local planning stage defines the urban development vision, objectives and strategies through a set of diverse urban planning instruments to regulate localised urban development.

#### 4. Local Urban Development without a Master Plan

Urban development in cities with a rapid population growth is influenced by diverse and sometimes unpredictable factors. Many cities around the world have adopted a spatial master plan approach to define land uses, densities, green areas, among other functions on a city-wide scale. These master plans are useful planning instruments to integrate urban sectors and outline the future urban development of the city for the next 12-20 years [2]. These plans produce a legal regulations framework to steer urban development towards the specific objectives defined by a city. The framework is defined by addressing the urban needs and the political orientation of the government. The master plan itself is a snapshot of the city in a particular moment and due to the rigidity of the legal framework, it often lacks the ability to adjust to the emergent challenges of urbanisation.

The master plan approach may present a feasible development strategy for cities with a stable or slow population growth and where globalisation or external forces have almost no direct impact on the urban development. However, for highly dynamic cities in which the demographics change rapidly, e.g. in the developing world, or globalised cities with the burden of accommodating a growing international population while balancing local needs, environmental concerns and economic pressures, an inflexible master plan approach falls short in its possibilities to modify existing regulation or to address unexpected changes. The experience of Frankfurt as a global city with a flexible localised planning process brings into question the effectiveness of a city-wide master plan approach, because a centralised, detailed, long-term master plan, produced as a spatial projection of the future at a specific moment in time, could probably not adequately steer the urban development in a dynamic growing city susceptible to the pressures of rapid demographic and economic change.

The spatial planning system in Frankfurt breaks down the master plan approach into a system of smaller-scale and more specific plans. The strategic and comparatively flexible scale of the *Regional Preparatory Land Use Plan*, mentioned above, leaves the more rigid detailing to localised plans aimed at the development of limited areas of the city with a greater need for regulation. The main local planning instruments in Frankfurt could thereby be classified into three categories, regarding their legal basis [16]: measures and bylaws of the Federal Building Code; bylaws of the State Building Code; and Legal Site Planning. These instruments are mostly incorporated into a specific *Legal Zoning Plan*<sup>6</sup> for each area under

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<sup>6</sup> In German: *Bebauungsplan*.

development, which is drafted and projected by the City Planning Department. The legal zoning plans produce detailed legally binding regulations and specifications steering urban development towards the objectives of the city.

For developers, investors and individuals, legal zoning plans are the key to securing building permissions. The admissibility of a project can then be decided on the basis of a qualified legal zoning plan [3]. A wide range of further specifications and possible contents in the legal zoning plans are allowed according to the Federal Building Code [1, 4, 7, 14].

#### **4.1. Urban Development Measures and Urban Refurbishment Measures<sup>7</sup>**

The Federal Building Code provides a set of measures to generate a legal framework for projects which fall outside the existing regulations for land uses and development. These measures can also complement the function of legal zoning plans as well as facilitate and control their implementation. They allow the swift acquisition of previously unused land, vacant land, or land required by the municipality for essential urban development purposes. They can also legalise construction in previously non-developable land under specific circumstances and allow the financing of municipal development projects.

For the urban development measures to be implemented, an urgent need for development, e.g. for housing provision, must be present, along with the feasibility of swift implementation, acquisition of property by the municipality and availability of finances. The municipality has then the right to acquire land for future developments at a price not yet influenced by the real estate speculation. The City Planning Department develops a potential development plan and the city sells the plots at the higher price of the developed building plots. All costs occasioned by the measure are financed by the differential between the purchase value of the land and the market value after the development plan is drafted. The capital surplus from the land sale has to be reinvested into the public and the social infrastructure, parks, and greeneries.

When there are shortcomings in the urban fabric, refurbishment measures for urban development can be initiated by the municipality. An urban refurbishment measure is an instrument that comes under the special building laws covering the urban renewal of entire districts; an urban refurbishment measure also aims at executing the project within a specific period of time. The City Planning Department underlines two indicators for shortcomings representing a need for refurbishment measures: if the area falls short in fulfilling the general health and safety conditions for the people living and working in the area, or if the area is considerably hindered to fulfill the functions given by its location and uses [20]. The refurbishment measure is an enforcement order, it is mandatory for owners and it is their responsibility to undertake a refurbishment building measure [7]. These include in particular the construction of new or substitute buildings, overhaul and relocation of companies and if necessary changes to the firms' operations [20].

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<sup>7</sup> In German: Städtebauliche Entwicklungsmaßnahme; städtebauliche Sanierungsmaßnahme.

## 4.2. Preservation and Design Bylaws

In contrast to the urban development measures, preservation bylaws enable the municipality to discourage urbanisation, refurbishment or redevelopment, and preserve the specific urban character of an area. The common purpose of the preservation bylaws is to protect the visual quality of the area, the aesthetic value of a landscape or other physical structures and elements of outstanding historical or artistic importance. Bylaws are also used to maintain the social composition of the local residential population and their social milieu as an instrument to prevent gentrification in an inner-city residential area, or to support and reorganise the structure of urban areas in a manner that is socially equitable [7, 18]. Preservation bylaws do not stipulate any specific design regulations but can designate specific areas within a legal zoning plan as preservation areas, where the dismantling or demolition of structures, alterations or changes in the land uses require a special permission. In the case of a preservation bylaw, also all other building activities that do not usually require building permissions are compelled to ask for a special permission [7, 18].

Similarly to the preservation bylaws and based on the State Building Code, the City Planning Department in Frankfurt utilises design bylaws in order to ensure the architectural quality of structures. They stipulate the design framework that new buildings must follow, and regulate the exterior design, e.g. the shape of the roof, the materials used etc., landscape and advertisement space. On the contrary to a preservation bylaw, the design bylaw makes precise stipulations with regard to the design of structures that are in the interest of a harmonious urban and architectural overall appearance. They can take the form of an independent bylaw, or also be integrated into the legal zoning plans [12].

## 5. Legal Site Planning<sup>8</sup>: A Flexible Planning Process

When referring to the concept of flexibility in spatial planning, the report of the Economic Commission for Europe [21], highlights the “Principle of Proportionality”. This principle states that although the presence of strong regulations in urban planning contributes to creating stability in the city and control over the utilisation of non-renewable resources, a certain degree of flexibility is necessary to address the emerging economic, social and technological issues. This proportionality principle contributes to determining the degree to which a specific pre-existing regulation would be introduced in the formulation of an official urban development plan. Flexibility stimulates new initiatives and innovation, focusing on the desired outcomes. Furthermore, the unpredictability of some urban issues requires flexible policies in order to allow planners to prioritise and focus their attention on the emergent issues, meeting the needs of a particular situation in a more effective way.

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<sup>8</sup> In German: Bauleitplanung.





Fig. 4. European Central Bank and Osthafen skaters park (photo by M. Peterek 2015)

In the case of the city of Frankfurt, legal site planning illustrates the principle of proportionality by avoiding the establishment of a rigid city-wide legal framework, and looking instead at the individual needs of different areas of the city, prioritising localised development projects in accordance with the urban vision. Legal site planning aims at steering urban development towards sustainable and balanced land uses by providing the instruments for integrated planning [13]; it is a form of land use planning that defines regulations regarding lot coverage, building heights, densities, obligations for public spaces, special housing typologies and other requirements, confined to a defined area of the city [7].

### 5.1. Legal Zoning Plans

The results of the legal site planning process are the legal zoning plans, which reflect the utilisation of the principle of proportionality in the planning system in Frankfurt. The City Planning Department is under no obligation to produce a city-wide master plan or legal zoning plans for the entire municipality [14]. Therefore, legal zoning plans are only developed for areas where it is considered necessary for urban development, allowing the city to focus and prioritise its efforts on finding solutions for more pressing urban issues in specific areas. The discretionary nature of the City Planning Department avoids spending unnecessary time and resources in the development of legal zoning plans for areas with no particular needs, increasing the efficiency of the municipality work.



Fig. 5. Ostend district (photo by M. Peterek 2015)

The legal zoning plans define detailed legally binding regulations on a scale that usually ranges from 1:500 to 1:2,000, following the legal framework of the Regional Preparatory Land Use Plan established by the Regional Authority. The legal zoning plans are adopted by the City Parliament in the form of a bylaw or municipal statute, and constitute the basis for other development activities and measures needed to implement the Federal Building Code, including land reallocation, land improvement, provision of local public infrastructure, compensation, expropriation, urban development enforcement orders, etc. [1, 4, 7, 14].

## 5.2. Non-formalised Planning

Another example of flexibility in the planning system in Frankfurt is the possibility of stakeholders, internal and external to the municipal departments, e.g. property owners, community organisations, developers, investors, etc., to initiate and propose localised urban development projects. Plans proposed by external actors are part of a *non-formalised planning*<sup>9</sup> process in Frankfurt, which complements the aforementioned formal planning instruments, giving the municipality a broader perspective of the real estate market and urbanisation trends in the city.

<sup>9</sup> In German: "Informelle Planung". This term does not refer to informality in the sense of illegality, but a project proposal that is not part of the formal planning process.



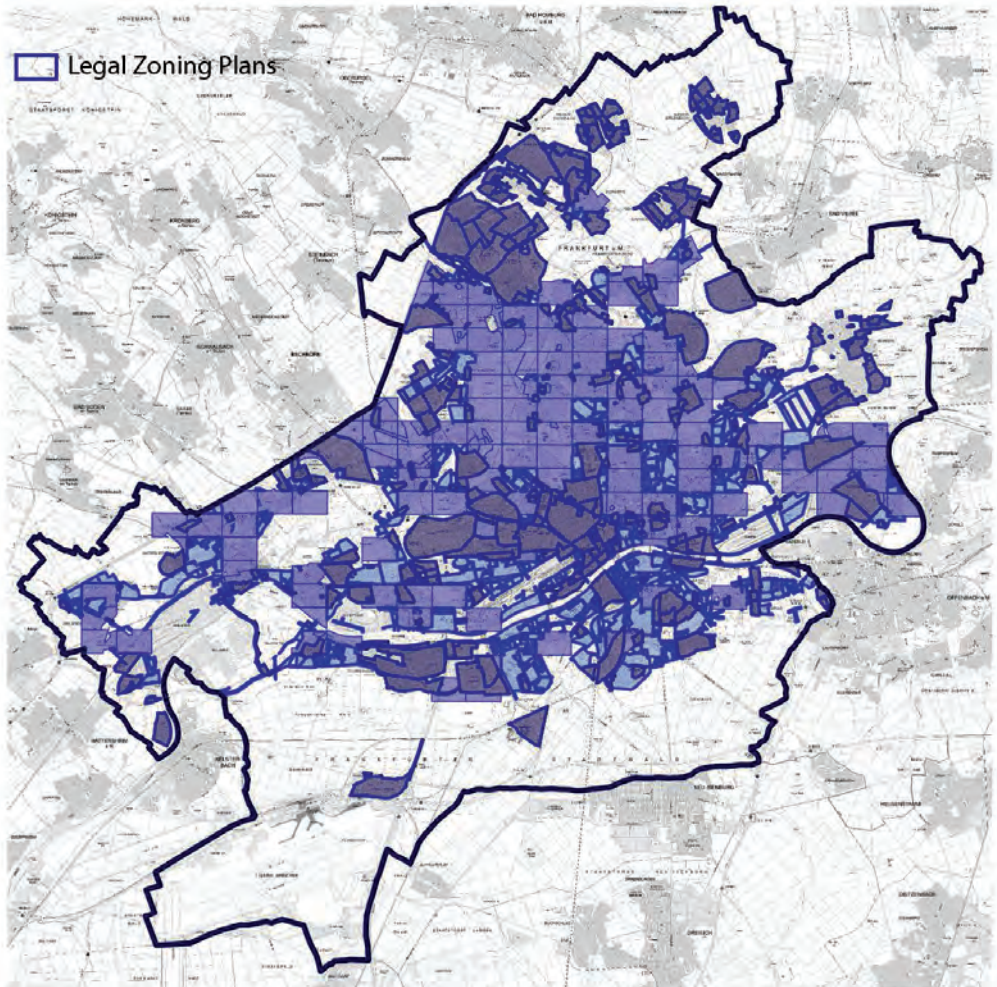


Fig. 6. Overview of existing legal zoning plans in Frankfurt am Main  
(source: Stadtplanungsamt Frankfurt am Main 2017d)

In the non-formalised planning process, the stakeholders draft development plans as proposals, which are later to be studied by the municipality in order to decide whether the projects would benefit urban development in the city. This discretionary character of the municipality motivates the private sector to propose innovative development projects, as well as inclusive discussions about a wide spectrum of urban issues. The non-formalised planning process may subsequently go through the scrutiny and formalisation process in the same way a legal zoning plan is analysed and sanctioned by the City Planning Department, the Magistrate and the City Parliament; if accepted it will become a legal zoning plan legally binding to be developed in the city. Examples of at the beginning non-formalised planning processes include the development of the *Westhafen* and the *Europaviertel* districts.

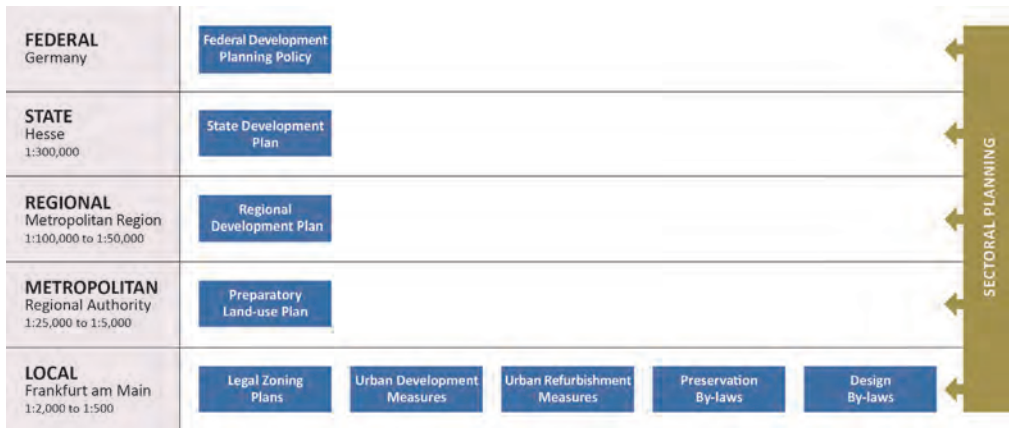


Fig. 7. The formal instruments of the urban planning process in Frankfurt and the RheinMain region. Elaborated by the Rapid Planning research team of FRA-UAS (based on [7, pp. 39, 41, 69–86; 16])

### 5.3. Example: Riedberg District

As a response to the increasing housing demand that was already present in Frankfurt from the early 1990's, in 1996 the Magistrate considered it necessary to formulate an urban development measure. This instrument allowed the city to acquire 267 hectares of agricultural land located on the northwest limits of Frankfurt. The city acquired the lands at a price not yet influenced by the real estate market speculations, and was able to sell the newly developed plots at a higher price. The capital gain resulting from the plot sell was invested in financing the infrastructure development of the area, social facilities, urban and transport infrastructure and open spaces [19].

The Riedberg development is currently one of the largest urban development projects in Germany. The implementation started in 1997, and it is divided into 94 hectares for parks, greeneries and landscaping; 89 hectares for construction land; 45 hectares for mobility infrastructure, streets and public spaces; 17 hectares for communal facilities, social services and sports facilities; and 22 hectares for the Natural Sciences Faculty of Frankfurt's Goethe University. The district comprises seven different quarters, each one with its own legal zoning plan. Once it will be completed, it is expected to accommodate a lively mixed-use development with approximately 15,000 inhabitants with a diversity of incomes, accommodated in around 6,000 diverse dwelling typologies. The development also plans for the provision of 3,000 jobs, as well as a community of around 8,000 students. Commercial and recreational facilities are also in the plan and offer different shopping opportunities and public amenities just 20 minutes away from the Frankfurt city centre [19].

Riedberg is a district in which diversity of uses, activities and socio-demographic structures have been considered since the early design phases, to offer a variety of opportunities and options within the same area to create an active community. In terms of education facilities, it offers kindergartens, day-care centres, elementary and middle schools, the Natural Sciences Faculty of Frankfurt's Goethe University and even some postgraduate studies. There is an attractive commercial district with different shops and restaurants. A family centre and the several events





Fig. 8. Housing at Riedberg district (photo by M. Peterek 2011)

organised throughout the year also provide different leisure and cultural opportunities, creating a lively district [5]. As part of the general open space strategy, over one third of the total area of the district was destined to the creation of a network of parks, plazas, green trails and other landscaped areas not only for leisure activities, but also for environmental and climatic purposes, including open water retention areas in the Katcheslachpark and the Bonifatiuspark [5, pp. 23, 24].

## 6. Conclusion

In Frankfurt, there is a well-defined planning structure, instruments, and procedures working in parallel with a clear approach towards a decentralised municipal administration, both based on a relatively long history of planning practice influenced by the legal system. The city has a flexible and decentralised planning system, able to maintain a healthy interaction for the provision of public services and coordinated infrastructure with the region. The large-scale, long-term Regional Land Use Plan is drafted by the Regional Authority with the strategic purpose to guide regional development and avoid conflicts between its 75 member municipalities. Nevertheless, the autonomy of the municipalities in the formulation of their respective vision, objectives, and utilisation of the appropriate planning instruments is not diminished by the regional mandate.

## Frankfurt - Riedberg: Gesamtübersicht



Fig. 9. Riedberg development plan (©HA Stadtentwicklungsgesellschaft mbH, 2003)

The city of Frankfurt exhibits extensive experience and capabilities in the implementation of diverse planning instruments for the achievement of its ambitious sustainable development objectives. The choices made by the municipality in avoiding a city-wide spatial master plan approach and implementing a more flexible and localised planning process responds effectively to the pressures imposed by globalisation, internationalisation of the economy and urban growth pressures. By breaking down the master plan approach into smaller-scale and more detailed legal zoning plans, and adopting a prioritising discretionary position regarding development projects, Frankfurt's spatial planning system has become a flexible system which allows the adaptation of the city to unpredicted urbanisation challenges.

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